

-continued

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Ala Lys Phe Val Ala Ala His Thr Leu Lys Ala Ala Ala
1           5           10

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<223> OTHER INFORMATION: Natural PADRE Sequence

<400> SEQUENCE: 146

Ala Lys Phe Val Ala Ala Ala Thr Leu Lys Ala Ala Ala
1           5           10

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1-14. (canceled)

15. A vaccine for the prevention or treatment of malaria, wherein said vaccine comprises:

a self-assembling polypeptide comprising:

a pentameric domain;

a trimeric domain; and

a linker that joins the pentameric domain and the trimeric domain; and

an epitope of an antigen capable of inducing a protective immune response in a mammal susceptible to infection by a malaria parasite.

16. The vaccine of claim **15**, wherein the self-assembling polypeptide is a continuous chain comprising peptide oligomerizations of the pentameric domain and the trimeric domain.

17. The vaccine of claim **15**, wherein the epitope is selected from one or more of the antigens and proteins set forth in Table 2.

18. The vaccine of claim **15**, wherein the sequence is selected from one or more of the sequences set forth in Table 3.

19. The vaccine of claim **15**, further comprising a pharmaceutically acceptable carrier.

20. The vaccine of claim **15**, wherein the antigen is a circumsporozoite protein of *P. falciparum*.

21. A method for vaccinating against infection from a malaria parasite comprising:

administering a functionalized self-assembling polypeptide nanoparticle comprising:

a self-assembling core; and

an epitope fused to the self-assembling core, wherein the self-assembling core comprises:

a pentameric coiled-coil domain;

a trimeric coiled-coil domain; and

a linker joining the pentameric coiled-coil domain and the trimeric coiled-coil domain wherein the epitope generates an immunologically protective reaction against infection by a malaria parasite when administered to a mammal.

22. The method of claim **21**, wherein the nanoparticle is administered without an adjuvant.

23. The method of claim **21**, wherein the epitope is PfCSP B-cell epitope sequence, (NANP)₃ (SEQ ID NO. 93).

24. The method of claim **21**, wherein the epitope is PfCSP B-cell epitope sequence, (NANP)₄ (SEQ ID NO. 94).

25. The method of claim **21**, wherein the epitope is a universal epitope comprising the sequence of SEQ ID NO. 8.

26. The method of claim **21**, wherein the epitope comprises the sequence of SEQ ID NO. 9.

27. (canceled)

28. The method of claim **21**, wherein said nanoparticle has a diameter of about 20 nm.

29. The method of claim **21**, wherein the epitope comprises an antigen of a malaria parasite.

30. The method of claim **29**, wherein the antigen is derived from a protein of *P. falciparum*.

31. The method of claim **29**, wherein the antigen is circumsporozoite protein.

32. The method of claim **29**, wherein the antigen is derived from the circumsporozoite protein of *P. vivax*.

33-50. (canceled)

51. A method for vaccinating against infection from a malaria parasite comprising:

administering a functionalized self-assembling polypeptide nanoparticle comprising: a self-assembling core; and

PanDR binding peptide HTL epitope fused to the self-assembling core, wherein the self-assembling core comprises:

a pentameric coiled-coil domain;

a trimeric coiled-coil domain; and

a linker joining the pentameric coiled-coil domain and the trimeric coiled-coil domain wherein the epitope generates an immunologically protective reaction against infection by a malaria parasite when administered to a mammal.

52. The method of claim **51**, wherein the nanoparticle is administered without an adjuvant.